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Popular Books about Flowers.

ONE of the noteworthy features of current popular literature is the large number of publications on the subject of our native wild flowers. Most of these books have had a large sale, and the natural inference from this would be that there is a growing interest in botanical science. It is possible, however, that the plan of doling out information in unrelated scraps and bits is not the true way to impart scientific knowledge. The teacher who does no more than fill up the minds of his pupils with fragments of truth really renders him little assistance and may inflict upon him a genuine injury. One who imagines that he is improving his mind when he is simply memorizing facts which others have discovered makes a fatal mistake. The real educational advantage derived from the study of a science is not so much the truth that is acquired as the habits of personal and self-reliant observation which are gained. Most of the books, however, to which we have alluded make no pretense of being scientific. Indeed, it is often announced as one of their conspicuous merits that they are cumbered with no science and with as little scientific language as possible. They set out with the assumption that systematic botany is a forbidding subject, and they aim, therefore, to impart information about plants in an attractive way, and this apparently means in an unsystematic and desultory way which is supposed to make moderate demands on the attention of the reader. What they propose primarily is to enable the reader to find the name of a plant by some method which will not require any effort. Sometimes the lists of flowers are arranged according to their color, or again according to their season of bloom, but they are never grouped or classified according to their structural affinities, which would seem to be the most natural way for people who have eyes and the power of association and comparison.

Two reasons are assigned for preparing treatises of this sort. One is the notion, and a silly one it is, although it has been put forward by men who ought to know better, that scientific knowledge destroys all sentiment and poetic feeling, and that the more one knows of the structure and vital processes of plants the less he is alive to their beauty. If one should claim that an acquaintance with geological science destroys all appreciation of the grandeur of mountain scenery, and that a knowledge of astronomy renders its possessor blind to the splendors of the starry heavens, the natural reply would be that only those who realize the vast periods of geologic time during which the earth has been molded into its present form, and the illimitable space through which the heavenly bodies are wheeling, as revealed by astronomical science, can receive any adequate impression of the sublimity of the earth and skies. Just so one who studies with microscopic care the structure of a flower, with its adjustments and relationships, feels more of its true poetry than the casual observer, who notes only its exterior graces of form and color. The second reason offered is that the scientific names of plants are repulsive, and that still more so are the names applied to their different organs and the processes of their development. But, as we have explained before, the difficulty in both cases is exaggerated. The botanical names of plants, it is true, are not always what they should be, but most of them mean something, and, as a rule, they are as easy to acquire as the common names, many of which are applied to half a dozen different species, while almost every ordinary plant has, at least, as many common names. It is the universal testimony of all who have made any serious study of botanical science that these plant names are not half as formidable as they seem, and that they invariably help, rather than hinder. Of course, as soon as one examines a plant or anything else carefully, and wishes to distinguish its various parts, some name must be invented, and we must talk of petals and pistils and stamens, and all the rest, as soon as we begin to separate the plant into its component parts. As soon as we learn to distinguish things we must have names to represent them, and it is impossible to write or speak intelligently of plants without using new terms unless we adopt clumsy circumlocutions. It is not objected to the study of elementary arithmetic that a boy must learn the meaning of dividend and subtrahend; it is simply the necessity of supplying a word to represent accurately a new idea.

Now, it is not to be inferred from all this, that we object to what is called the popularization of science. The real danger from these books is that they have a tendency to vitiate the popular idea of what real science is. One who has been helped by the means of pictures and other assistance to apply the proper names to one hundred and fifty different plants has the advantage of just that amount of mental furniture. When he hears one of these names he knows what plant is referred to, and he is certainly better off than one who does not know this much, but, of course, this knowledge gives him no title to the possession of any real botanical science, and the danger is that young people who are helped to such a trivial amount of information will be prevented from an effort to acquire more, and will be deprived of enjoying the fruits of genuine personal application. It is quite as easy for young people to begin right. It is not to be expected or hoped that many of them will make any great progress in the intricacies of this science, but, as far as they go, their knowledge can be accurate and systematic, and they can have the advantage of their training powers of attention and comparison. They may get no farther than the very rudiments of the science, but, as far as they go, it will be true science, and they will have not only the mental improvement, but the sense of power as well as the pleasure which comes from orderly study and the attainment of knowledge by the exercise of their proper faculties. What the student gains by his own investigation is not only useful knowledge, but it helps him to acquire other knowledge. It is not the facts that are so much needed by the student as the development of the habit of systematic observation.

The real work of this kind must all be done by the student, although, of course, this work will be much more effective under the sympathetic guidance of a skilled instructor. Instead of waiting till he can find a flower and

carry it to the book to hunt up its picture he can begin with the first leaf he sees, and note its outlines and appendages and peculiarities of position. One of the great botanists of the age has said that when a child with the plants in his hand learns to discriminate, by his own observation, between such parts as the simple, heart-shaped, opposite stalked leaves of a Lilac, and the compound, alternate, stipulate leaves of a Rose, he is gaining the habit of acquiring knowledge which is not at all measured by the amount or the kind of information received. It is not a matter of much moment whether he learns such trivial facts as those mentioned, but it is of the highest importance that he should be taught how to obtain knowledge by such direct observation and comparison. Of course, his studies should commence with the observations of the simple external forms of plants with the more obvious roots and stems, leaves, tendrils, veins, flowers, etc., but such a beginning forms a habit which will surely carry him forward to more difficult fields.

The word science has a formidable sound to many ears, but it really means nothing but systematic knowledge. Every child during the earlier years of its life is engaged almost continually in what is practically scientific study. He is examining every phenomenon that presents itself to his senses; he observes things, he compares them, he naturally forms some idea of their alliances and classifies them by their prominent characters. The best thing that a teacher can do is to encourage him in just this sort of work instead of giving him a book to tell him what some one else has found out. Of all the natural sciences botany is the most convenient for training the eye to see and the mind to note relations with alertness. Material for this study is at hand everywhere and at every season. These popular books are all flower-books, but the flower is only a part, and a small part, of the plant. Every tree invites investigation — its general form, the ramification of its branches, its bark, its winter buds, all open wide fields for delightful study as the student's mind improves and he becomes more able to draw conclusions from what he sees. There are lessons in every window-plant in winter, and even in the dried stalk of every wayside weed. Professor Marshall Ward, whom we have already quoted, has well said that a Hyacinth bulb when compared with a Potato tuber, makes a most interesting object of study, and so does every nut and apple and orange which a child eats.

All this means that science can only be acquired by study, and not by reading popular flower-books. But study, so far from being drudgery, is delightful occupation. Studious habits are easily acquired by the young, and botanical science, when properly prosecuted, is one of the best ways of training the eye and the mind to habits of attention. Besides this, it is a study which brings one into close contact with nature, and stimulates a love for natural objects, which will increase with years and prove a life-long joy and solace.

Parks, Parkways and Pleasure-grounds.—II.

IN our last issue we quoted from the *Engineering Magazine* portions of an article on this subject by Mr. Frederick Law Olmsted, which discuss the government of parks and the points to be considered in choosing their sites and boundaries. The selections which follow include the greater part of what Mr. Olmsted says in relation to the plans or designs of parks and to the construction of parks:

In order to be able to devise a consistent plan, such as may be followed during a long period of years with surety that the result will be both useful and beautiful, it is necessary, in the first place, to define as accurately as possible the ends or purposes to be achieved. As already remarked, these ends or purposes are as numerous as are the various modes of recreation in the open air. Thus, a small tract of harbor-side land at the north end of Boston has been acquired by the Park Commission in order to supply the inhabitants of a poor and crowded quarter with a pleasant resting-place overlooking the water, and with opportunities for boating and bathing. Accordingly, the plan provides a formal elevated stone terrace, connecting by a bridge spanning an intervening traffic street with a double-decked pleasure-pier, which in turn forms a breakwater enclosing a little port, the shore of which will be a bathing beach. In the adjacent city of Cambridge a rectangular, level and street-bounded open space has been ordered to be arranged to serve as a general meeting-place or promenade, a concert-ground, a boys' playground, and an outdoor nursery. Accordingly, the adopted plan suggests a centrally placed building which will serve as a shelter from showers and as a house of public convenience, in which the boys will find lockers and the babies a room of their own, from which also the head-keeper of the ground shall be able to command the whole scene. South of the house a broad, but shaded, gravel space will provide room for such crowds as may gather when the band plays on a platform attached to the veranda of the building. Beyond this concert-ground is placed the ball-field, which, because of the impossibility of maintaining good turf, will be of fine gravel, firmly compacted. Surrounding the ball-ground and the whole public domain is a broad, formal and shaded mall. At one end of the central building is found room for a shrub-surrounded playground and sand-court for babies and small children. At the other end of the house is a similarly secluded outdoor gymnasium for girls. Lastly, between the administration house and the northern mall and street, there will be found an open lawn, shut off from the malls by banks of shrubbery and surrounded by a path with seats where mothers, nurses and the public generally may find a pleasant resting-place.

Plans for those larger public domains, in which scenery is the main object of pursuit, need to be devised with similarly strict attention to the loftier purpose in view. The type of scenery to be preserved or created ought to be that which is developed naturally from the local circumstances of each case. Rocky or steep slopes suggest tangled thickets or forests. Smooth hollows of good soil hint at open or "park-like" scenery. Swamps and an abundant water-supply suggest ponds, pools or lagoons. If distant views of regions outside the park are likely to be permanently attractive, the beauty thereof may be enhanced by supplying stronger foregrounds; and, conversely, all ugly or town-like surroundings ought, if possible, to be "planted out." The paths and roads of landscape parks are to be regarded simply as instruments by which the scenery is made accessible and enjoyable. They may not be needed at first, but, when the people visiting a park become so numerous that the trampling of their feet destroys the beauty of the ground cover, it becomes necessary to confine them to the use of chosen lines and spots. These lines ought, obviously, to be determined with careful reference to the most advantageous exhibition of the available scenery. The scenery also should be developed with reference to the views thereof to be obtained from these lines. This point may be illustrated by assuming the simplest possible case, namely, that of a landscape park to be created upon a parallelogram of level prairie. To conceal the formality of the boundaries, as well as to shut out the view of surrounding buildings, an informal "border plantation" will be required. Within this irregular frame or screen the broader the unbroken meadow or field may be, the more restful and impressive will be the landscape. To obtain the broadest and finest views of this central meadow, as well as to avoid shattering its unity, roads and paths should obviously be placed near the edges of the framing woods. In the typical case a "circuit road" results. It is wholly impossible to frame rules for the planning of rural parks; local circumstances ought to guide and govern the designer in every case; but it may be remarked that there are few situations in which the principle of unity will not call for something, at least, of the "border plantation" and something of the "circuit road."

Within large rural parks economy sometimes demands that provision should be made for some of those modes of recreation which small spaces are capable of supplying. Special playgrounds for children, ball or tennis grounds, even formal arrangements such as are most suitable for concert grounds and decorative gardens, may each and all find place within the rural park, provided they are so devised as not to conflict with or detract from the breadth and quietness of the general landscape. If boating can be provided, a suitable boating-house will be desirable; the same house will serve for the use of skaters in winter. In small parks economy of administration demands that one building should serve all purposes and supply accommodations for boating parties, skaters, tennis-players, ball-players and all other visitors, as well as administrative offices. In large parks separate buildings, serving as restaurants, boat-houses, bathing-houses and the like, may be

allowable. It is most important, however, to remember that these buildings, like the roads and paths, are only subsidiary, though necessary, adjuncts to the park scenery; and, consequently, that they should not be placed or designed so as to be obtrusive or conspicuous. Large public buildings, such as museums, concert halls, schools and the like, may best find place in town streets or squares. They may wisely, perhaps, be placed near, or facing upon, the park, but to place them within it is simply to defeat the highest service which the park can render the community. Large and conspicuous buildings, as well as statues and other monuments, are completely subversive of that rural quality of landscape the presentation and preservation of which is the one justifying purpose of the undertaking by a town of a large public park.

That the man who thinks out the general plan of a park ought to have daily supervision of the working out of that plan is undoubtedly theoretically true. It is impossible to represent in drawings all the nice details of good work in grading and planting, and yet no work is more dependent for its effect upon finishing touches.

On the other hand, however desirable the constant oversight of the landscape-architect may be, it is impracticable under modern conditions. The education of a designer of parks consumes so much time, strength and money that no existing American park commission, unless it be that of New York, can as yet afford to engage the whole time of a competent man. Consequently it is the usual practice for the landscape-architect to present his design in the form of a drawing or drawings, and to supplement the drawings by occasional visits for conference with those in immediate charge, by descriptive reports and by correspondence.

The prime requisite in the resident superintendent of park work is efficiency. Naturally enough, most of the superintendents of parks in the United States have been trained either as horticulturists or as engineers, but it is not necessary, or even desirable, that such should be the case. Probably the best results will be achieved by men who, possessing the organizing faculty and a realizing sense of the importance of their work, shall, with the assistance of an engineer and a plantsman, labor to execute faithfully designs which they thoroughly understand and approve.

Most men of specialized training, such as architects, engineers and all grades of horticulturists, stand in need of an awakening before they are really competent to have to do with park work. Each has to learn that his building, his bridge or road, his tree or flower, which he has been accustomed to think of as an end in itself, is, in the park, only a means auxiliary and contributive to a larger end—namely, the general landscape. It is hard for most gardeners to forego the use of plants which, however lovely or marvelous they may be as individuals, are only blots in landscape. It is hard for most engineers to conform their ideas of straightforward construction to a due regard for appearance and the preservation of the charm of scenery. Neatness of finish in slopes adjacent to roads is not sufficient; such slopes must be contrived so as to avoid formality and all likeness to railroad cuts or fills. Road lines and grades which may be practicable in the ordinary world are to be avoided in the park, because the pleasure of the visitor is the one object held in view. Roads, walls, bridges, water-supply, drainage and grading—such of these works as may be necessary are to be executed with all technical skill, as in the outer world; but the engineer in charge should be a man who will see to it that the work is done with constant regard to the object of a park as distinguished from the object of a city street or square or railroad.

Similarly, the park planter should be a man capable of holding fast to the idea that the value of a rural park consists in landscape, and not in gardening or the exhibition of specimen plants. Guided by this idea, he will avoid such absurd traces of formality as the too common practice of planting trees in rows beside curving driveways. In devising necessary plantations he will give preference to native plants, without avoiding exotics of kinds which blend easily. Thus, where a Banana would be out of place, the equally foreign Barberry, Privet or Buckthorn may be admissible and useful. Influenced by the same principle, he will confine flower-gardening to the secluded garden for which space may, perhaps, be found in some corner of the park.

Nothing, at first thought, would appear easier than to arrange a few trees in a beautiful group, yet experience has taught us that the generality of persons, in their first essays in ornamental planting, almost invariably crowd their trees into a close, regular clump, which has a most formal and unsightly appearance, as different as possible from the easy-flowing outline of a natural group.—*Downing.*

When is Rhus toxicodendron Most Active?

I BELIEVE it is generally assumed that the most active part of Poison Ivy is the leaves; at least, they are the only officinal part of the pharmacopœia, and it is from them that Professor Maisch obtained the volatile toxicodendric acid, supposed to be the poisonous principle. One would, therefore, hardly expect cases of poisoning in the early spring or before the leaves are well developed.

The plant abounds on this island. On April 29th a young soldier of this garrison presented himself with well-marked symptoms of dermatitis venenata affecting the arms and face; I could hardly believe that at this early date poisoning by Rhus was possible, and, therefore, inquired into the circumstances. I found that the patient had, with several comrades, been hunting snakes under rocks covered with the Rhus-vine, and that two of these comrades were similarly affected. Two or three days later a little girl who had been playing in the vicinity of the same rocks developed the usual characteristic eczematous rash, and doubt was no longer possible. At the time these cases were contracted the vine was (and is mostly still at this writing) perfectly bare; no leaf was visible and the buds were only just beginning to swell. We are, therefore, forced to the conclusion that the poisoning was produced by the stem—that is, by the active principle, presumably, contained in the young sap exuding or evaporating through the bark. The little girl mentioned above was much exposed to the Rhus during the whole of last summer without ever being poisoned. Does it follow, therefore, that it is more active in the early spring than later in the season, and that the poisonous principle is, at least, as much in the stem as in the leaves? As this question can only be solved by the comparison of many experiences, I submit it to the readers of GARDEN AND FOREST in the hope that they will make a record of their own observations in its columns.

Davids Island, N. Y. *V. Havard.*

In the Pines.

FOR more than a quarter of a century vegetation has never been so backward in the Pines as it is this year. The birds, too, were very tardy in coming, but they are all here now in full force. Both the Baltimore and Orchard orioles are specially abundant. We almost despaired of our catbirds, for not until the 6th of May did they make their appearance in our neighborhood. The thrushes, vireos, wrens, orioles and many others were all here before them, which is very unusual. The winter birds, too, were slow to depart. The whitethroats were still with us the first week in May, and I saw now and then a junco lingering with them after the main body of these birds had gone.

On the 10th of May Apple-trees were still in bloom, but everything is now pushing so rapidly that by the first of June no marked difference in the season of our fruits and flowers will be noticed.

The Pines are beautiful now with Andromedas and the various Huckleberries, and the Sassafras is in full flower and giving a delicious spicy fragrance, together with the Bayberry, which is crowded with fertile catkins, and the fragrant new leaves are rising above a setting of old ones, which seem loath to give up their hold to this new generation. I see no appreciable effects of the severe winter on any of the evergreen plants, shrubs or trees in the Pines. This, no doubt, is largely due to the protective snow which was unusually deep during the coldest weather. The foliage of our charming Pyxie and the Arbutus is both more luxuriant and fresher looking than usual; they are out of flower, but the little Wind Anemone is still in bloom, and also numerous Violets. The Wild Strawberry almost carpets the ground with white in some places.

Large clumps of Euphorbia Ipecacuanhæ are showy in white sandy places, with dense masses of purple foliage and greenish flowers. The wild Columbine is swaying its graceful flowers on its slender stems, and the wild Lupine, with its straight, upright spikes of blue flowers, is in striking contrast.

Almost every year the Pines are invaded by some wandering plant from foreign parts, which settles down and makes itself at home among the old inhabitants. This spring, for the first time, I see the Sherardia arvensis has become a fixture on our roadsides. It is welcome, as it is a little delicate thing with whorls of six small leaves around the square stems, and small blue flowers surrounded by a thick involucre. This pretty plant can never become a pest, like its European relative, Galium Mollugo.

Pyrus arbutifolia is in flower, as well as some belated specimens of Amelanchier, but the latter is mostly in fruit, and promises an abundant harvest. The Swamp Maples are handsome with thick clusters of flaming red keys, and it will not be long before the brilliant Laurel and the Magnolia and Xerophyllum, with many other attractive flowers, will amply repay excursions in the Pines.

In the garden a white single Rose, one of the Rugosa type, commenced blooming on the 10th of May, and is now white with large beautiful roses. This is one of Mr. Dawson's plants. Other single white Roses in the garden are from two to three weeks later than this.

Great clumps of the German Iris are making a good display in the border, and some of the more choice Columbines are very attractive. But for brilliant color there is nothing better than a mass of scarlet Poppies, which are now in all their glory.

Vineland, N. J. *Mary Treat.*

Foreign Correspondence.

Primulas.

THE genus Primula has a special fascination for horticulturists, a large number of species being included in our popular plants for the Alpine garden, while others are valued as pot-plants for cultivation in the conservatory. The Royal Horticultural Society holds a special exhibition of Primulas every year, accompanied by the reading of papers and discussions by specialists, which are of sufficient interest and importance to be called a Conference. At the exhibition this year a large number of plants were shown in flower, and papers were read by Mr. Baker, F.R.S., and others. Although the season has been most unpropitious for plants of the nature of alpine Primulas, yet the collections shown were almost, if not quite, equal to those of previous years. The Auriculas were well represented, and, as usual, received a large share of attention from the laity, who are, as a rule, uncertain whether they ought to admire or be amused by such quaintly colored flowers. Polyanthuses are not popular in English gardens nowadays, and yet there are few herbaceous plants that will produce such an effective display of brightly colored flowers as these do in spring under the most ordinary treatment. But after all, the species, true and undefiled, are the élite of Primulas. Mr. Douglas showed a first-prize collection of twelve, which were a delightful picture; they were P. mollis, P. Japonica, P. rosea, P. denticulata, P. verticillata, P. Cashmeriana, P. floribunda, P. Auricula, P. obconica, P. amœna, P. intermedia and P. decora. These are all first-class garden-plants. One of the most charming corners in the rock-garden at Kew just now is a peat-bog of about four square yards filled with tufts of P. rosea, all in full flower, and as bright in its rose color as the Chionodoxa was in its blue a few weeks ago.

A list of the species of Primula in cultivation in English gardens would comprise at least fifty. There were thirty in flower in the Alpine house at Kew a few days ago. Mr. Baker, in his interesting remarks on the botany of the Primula, said that whereas twenty years ago the number of species known was between seventy and eighty, we now know about one hundred and fifty. The increase is largely due to discoveries in India and China. To quote Mr. Baker's own words: "We have now about one hundred and fifty species, of which, in round numbers, fifty are Chinese and Japanese, fifty are Himalayan and the other fifty are spread through Europe, northern Asia and America." There are some distinct and handsome plants among the new discoveries in western China, which, however, have still to be introduced into cultivation. It would be worth the while of some enterprising nurseryman to send a collector into the districts made botanically famous by the missionaries, David and Delavay, and by Dr. Henry, many of the plants collected in Yun-nan, etc., by them being such as would find general favor with horticulturists.

A paper by Mr. Self-Leonard, an enthusiastic tradegrower of Alpine plants of all kinds, dealt with the cultivation of Primulas. He divided them into three classes: (1) Species for the greenhouse, comprising P. obconica, P. Sinensis, P. mollis, P. verticillata, etc.; (2) large, strong-growing, hardy species, generally of the easiest culture, and comprising such noble garden-plants as P. denticulata, P. Japonica (an excellent plant for massing under trees), P. capitata, P. Sikkimensis, P. Stuartii, etc.; (3) the smaller and choicer Alpine species. For these he claimed a style of beauty altogether their own, which made their separation from their coarser brethren, both in the garden and in the exhibition hall, essential.

The cultural requirements of the plants of the third class were not, in Mr. Self-Leonard's opinion, of a special character, but, broadly speaking, they thrive under the same treatment as the Auricula, except that they do not require so complete a rest in midwinter, and at other times they do not need the continuous care and studied culture necessary to produce good Auriculas. Protection from the excessive wet in winter and spring rather than from cold is needed, most of them enjoying the low winter temperature if kept dry. On the other hand, many of them are all the better for protection from summer heat. The cooler climate of northern Europe always suits Primulas better than that of the south; for instance, they grow better in Scotland than in most parts of England.

The soil recommended was loam with a little sand, rather heavy than light, and an avoidance of peat in every case. A chalk soil is not, in his opinion, essential to the culture of any Primula and is poisonous to some of them. "Experience conclusively proves that those alpine Primulas, which, in nature, are only found on calcareous soils, can be easily grown in our gardens without a particle of chalk or lime in the soil." Mr. Self-Leonard, like all experienced cultivators, attaches comparatively little importance to the soil. He condemns "nostrums" and commends an intelligent interpretation of nature's teaching by the light of the cultivator's experience.

A third paper by Mr. Douglas on the Auricula dealt chiefly with their cultural requirements if intended to win prizes at exhibitions. He condemns indiscriminate crossing, especially between plants of the different sections, a bastard, inferior in all respects to its parents, being generally the result. The Auricula has had its devotees in England for about three hundred years, but only during the last century have the show varieties been classified according to the variegation or coloration of the flowers. Thus now we have (1) green-edged varieties which have white centres, black or blackish maroon zones and a margin of dark green; none of the plants in this class have powdered leaves; (2) gray-edged varieties, characterized by a thick coating of white farina on the outer margin, through which the ground color partially shows; (3) white-edged varieties, in which the powder on the margin is thick and uniformly white; (4) selfs, which have white eye-like centres and an unshaded margin of blackish maroon, purplish blue or red; in fact, any color that can be obtained, but it must be clear and unshaded. The mealiness of the foliage in some of the varieties is so excessive that they are known in some localities as the "Dusty Miller." Mr. Douglas exhibited a fine specimen pan of Primula auricula grown from a little plant collected on the Swiss Alps fifteen years ago, and which he has had under garden-culture in rich soil ever since. Although, as he says, it had increased a hundredfold, it had not altered in the slightest in the size, form or color of the flowers. In

breeding new sorts, Mr. Douglas, after carefully selecting his breeders, considered himself lucky to get one seedling in a hundred that was worth growing for further trial. This applies only to the show or edged Auriculas, seedlings of the alpine varieties being generally of good quality and far less variable. Of course, all the named varieties are propagated by offsets and division. The seed should be sown as soon as ripe, usually about midsummer, and kept in a cool shady place. It germinates freely in the following spring, and the seedlings are pricked off as soon as they are large enough to be handled with safety. They are again potted into single pots, flowering, as a rule, in the second year from the sowing of the seeds. As a rule, a full-sized plant can be grown in one year from the seed-pot or from an offset. The offsets are planted in small pots and kept under shaded hand-lights till well rooted. The right season for repotting is May, the soil to use is good loam, and the position for the plants during the summer is in an airy frame on the shaded or north side of a building or wall. Mr. Horner has said that many people failed with Auriculas because they would set them out under garden-hedges, much to the enjoyment of snails and caterpillars, or keep them in cold damp pits or even down in areas. The successful grower has cool, light, airy houses or frames for them, and with these conditions, plus an intelligent knowledge of the nature of the plants, no department of floriculture yields greater or more lasting pleasure than that of Auricula growing.

London. *W. Watson.*

Plant Notes.

AKEBIA QUINATA.—This vigorous twining plant is generally used for the covering of fences, arbors and the like, and it will quickly spread over large surfaces. But while it is most useful for that kind of work, it is also interesting when trained as an upright bush on a border or lawn, or when allowed to ramble over some shrub which is of little value. The prettily shaped leaves, which are digitate, are unlike those of most other vines, and they hold their shape and color well into the winter. The flowers, while lasting only a short time, are exceedingly pretty; the female flowers open first, and are more showy than the male flowers, being of a rich claret color, and two or three times as large as the others. They possess the additional merit of being very sweetly scented. A good way to train the plant to a bush form is to stick a few good stout tree branches in the ground; it will soon ramble over them and make a most beautiful object. The reason that this vine does not ripen fruit more frequently is probably owing to the fact that it flowers so early in the year, and that it produces the female flowers first, and these are nearly past before the males have had time to ripen their pollen. Occasionally, however, individual plants in this country and Europe produce fruit. In Japan its long, slender, pliable shoots, which are of uniform size throughout, are much used for wicker-work and even for baskets, trays and sun hats. Cuttings of the ripened wood put in a cold frame about the beginning of September will root quickly. The plants need considerable sunlight for their best development.

EXOCHORDA GRANDIFLORA.—This Pearl Bush, as it has been aptly called, is now altogether the most striking shrub in Central Park, although most of the specimens there have been allowed to grow into disagreeable open shape, which, together with thin foliage, makes a rather unattractive plant when out of flower. In New England this is not a long-lived shrub, and rarely attains a height of more than six or eight feet. South of this it becomes a small tree, or a shrub from fifteen to twenty feet in height. If cut in hard after it flowers every year it can be held to something like a compact shape, but if left to itself it has a better effect with some lower-growing shrubs massed in front of it to hide its naked stems. This is by no means a new shrub, having been known to cultivation for nearly half a century, but for some reason it has never become as common as its near relatives, the shrubby Spiræas. Its great beauty consists in its large flowers, which appear with the leaves in long axillary racemes. They are borne in great abundance and are of a dazzling white. Large plants in this latitude produce seed freely, so that the plant is readily propagated in this way.

LILY OF THE VALLEY, FORTIN'S VARIETY.—This is a variety of French origin, and though it was distributed a few years ago by Peter Henderson & Co., and perhaps others, it does not seem to have created much of a stir, and it is not much grown in American gardens. It is a noble variety, much more vigorous and larger in all its parts than Convallaria majalis. The stem is tall and is clothed with flowers over twice the size produced by the ordinary variety under the same treatment. The bells are of the purest white.

IRIS STATELLÆ.—This is a Sicilian variety of Iris lutescens, and is one of the most attractive Irises, of medium height, which flowers at this time. It has large prominent standards, tongue-shaped and smaller reflexing falls. The flowers are of a pearly-white color, of very fine form and most distinct. It is a fine garden variety and excellent for decoration.

New or Little-known Plants.

A Blue Water-lily from Mexico.

THE handsome Water-lily * figured on page 206 was collected by Mr. T. S. Brandegee near Mazatlan, Mexico, in November, 1893. The flowers, which vary somewhat in size, are sometimes fully six inches in diameter and are of a pale blue color. The stamens are yellow, with long anthers and minute tips. The leaves are nearly orbicular, with few teeth, greenish above, with a few blotches, and of a dark purple beneath. The flowers were obtained from a small pond in an enclosed pasture containing about a hundred plants. Although those were the only specimens seen, the plant was reported to grow in abundance about the neighboring river. I am not quite sure of the species, but it appears to be nearest Nymphæa elegans of Hooker, which was figured in the *Botanical Magazine* in 1851, table 4604. Mr. Brandegee's specimens agree almost exactly with this figure, except that the flowers are considerably larger. N. elegans has until recently been one of our rarest species, and for nearly forty years remained uncollected (*Bull. Torrey Bot. Club*, XV.: 14). In late years it has been frequently sent in by such well-known collectors as Mr. C. G. Pringle, Mr. G. C. Nealley and Mr. J. E. Bodin. The original specimens of N. elegans are said to have come from New Mexico, but all our recent collections have been made from Texas. The species has not been reported from the west coast of Mexico, and this fact, taken in connection with the difference in size of the flowers, leaves some doubt as to above reference of these specimens. It certainly belongs to no other Mexican species with which I am familiar.

Department of Agriculture, Washington. *J. W. Rose.*

Cultural Department.

The Rock Garden.

THE winter, just past, proved to be one of the most trying of recent years for vegetation on rock-work. On the first of May the plants seemed two weeks behind time, but the dry, hot weather of the past week has hurried all spring flowers into bloom, so that everything has caught up. We cannot complain of many specific losses, but much injury has been

* Castalia elegans (Hook.), Greene, *Bull. Torrey Bot. Club*, XV.: 85 (1888).—Nymphæa elegans, Hook., *Bot. Mag.*, t 4604 (1859).

Leaves nearly orbicular, a little longer than broad, 7¼ by 6 inches, with 7 or 8 radiating nerves on each side of the mesial line, dark green or somewhat purplish above, dark purple beneath, the margins nearly entire with 5 or 6 small scattered teeth; lobes overlapping at base except their apices; flowers 4 to 6 inches in diameter, light blue; sepals brownish at base, light green above with purple blotches, light blue within; outer sepals without a scarious intermargin and inner sepals nearly like the petals; petals 12 to 20, oblong, obtuse; stamens not numerous, about 75 filaments broad, yellow; anthers longer and narrower than the filaments, yellowish; the prolonged connective a mere tip, at most 1⅛ lines long.

done to many fine plants which have usually come through in good condition. It was apparently during the ice storms in February when the greatest damage was done, rather than by severely cold weather at any time, though low temperature was continuous. All the Moss Pinks, Phlox subulâta, in exposed situations, were much burned. Many European species of Dianthus, D. alpinus, D. neglectus, D. glacialis, D. subcaulescens, D. plumarius and D. armulatus (Cyclops) are dead entirely. D. arenarius, D. cœsius and D. deltoides appear to be the only ones which have come through uninjured. Silene Schafta is among the lost. Primula rosea has stood uninjured for two seasons. Now only a few seedlings remain, which evidently have been protected by other low-growing plants among which the seeds had been scattered. Of the Megasea section of the genus Saxifraga, M. purpurascens, is badly burned, while M. cordifolia is scarcely touched; the immunity of the latter may be due in part to a more protected location. Many plants belonging to the mossy group of Saxifrages are missing, and what are left are considerably browned.

On the other hand, bushes of the Dawson Rose, with canes from eight to ten feet long and arching upward from two to three feet, are not at all touched. Stout plants of the Japanese form of Rosa multiflora are green to the ends of the branches. Rosa Wichuraiana looks as fresh as it did last autumn. I found canes of this handsome trailing Rose sixteen feet long and twined them about the trunk of a young Walnut-tree. These stems are now breaking freely more than six feet away from the ground. No better testimony to the extreme hardiness of this beautiful Rose could be desired. We have it trailing over rocks on a rather steep slope. It is appropriately placed, but the space devoted to it is limited. It is clearly a subject for a sunny bank in the wild garden, where it can roam unmolested. Bushes of Andromeda Japonica, which from some reason or other have never bloomed before, are flowering well this spring. They have always been protected with loose litter, and every autumn they have been well set with drooping racemes of flower-buds. This is indeed a handsome shrub for planting where it can have protection from the direct rays of the mid-day sun. Several bushes of the Polyantha Roses, White Pet Mignonette and Clothilde Soupert, are growing in recesses between the rocks. It may be they are not appropriate subjects for the rock garden, but they have always done well here and have plenty of good green wood eighteen inches or more above ground, while those in a bed especially prepared for them and protected every winter with litter, are killed to the ground. Ramondia Pyrenaica came through better even than it did last season. White Asphodelus lutea, never supposed to be hardy, is throwing up a strong flower-spike. Sal-

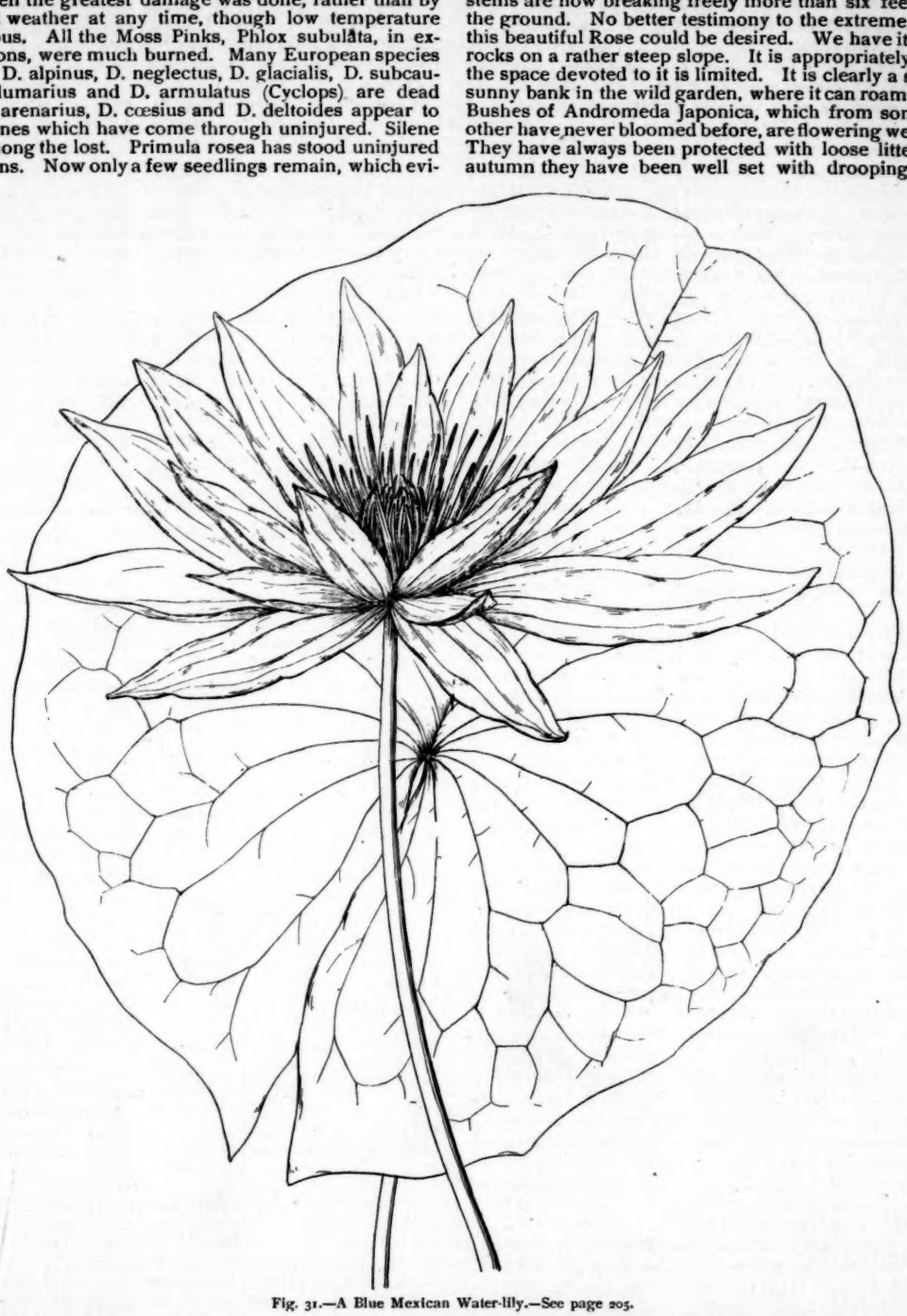

Fig. 31.—A Blue Mexican Water-lily.—See page 205.

via argentea is making a good spread of its handsome silky foliage for the third year, and is thus proving a good perennial.

Nearly all the Narcissi are over. Jonquils and the old form of N. poeticus are all that remain in bloom. The variety Ornatus comes and goes with Horsfieldii, Emperor and Sir Watkin. Usually the Poets' Daffodil stays with us until the end of the month, when large quantities are used in the ceremonies of Decoration Day. Siberian Squills, Chionodoxas and Snowdrops, Galanthus, all low-growing, early-flowering bulbs, and splendid for massing, are now forming their seed-capsules. It might be worthy of note that all these early spring bulbs can be easily increased from seeds. The capsules will be ready to gather in about three weeks, just as soon as the seeds turn black. If left longer they burst, scattering the seeds all about. They should be sown at once, but will not germinate until the following spring. The young bulbs should be allowed to grow one season in the seedling-box, and transplanted after the ripening process in August. After another season's growth they will be ready for permanent quarters. By being let alone—that is, being simply weeded, instead of hoed—our Siberian Squills have increased fourfold during the last five years, seedlings coming up every spring, outside the original patch, in batches like young Onions.

Admirers of alpine plants, who can find time to weed instead of hoe, will find their work quite full of interest. It will, however, often be our duty to weed out some beautiful plants. We soon lose all affection and admiration for a plant, however beautiful, when once it becomes aggressive. Years ago we had several species of Potentillas. All had handsome Strawberry-like leaves and yellow or brown, saucer-shaped flowers, but they spread so extensively that we have been weeding them ever since. Alyssum saxatile and Dianthus deltoides are other plants which need to be thinned considerably to be kept within bounds. Viola cucullata, in white, purple and striped, rapidly spreads. Whatever we find inspiring w allow to bloom when they do not interfere with other plants, and pull them out when summer comes. On the contrary, there are others we can scarcely have too many of. Mertensia Virginica is one of these. Just now its nodding cymes of incomparable blue are springing up everywhere between the rocks and along the paths, where really they ought not to be. The rock garden must not be artificial, so we leave them. Periwinkles, now in splendid bloom, are growing out into the paths, compelling one to make a detour; most of us would rather do this than cut it away. Campanula Carpathica, C. turbinata and C. cæspitosa are other plants which come up in all sorts of places, and we are loth to disturb them. Œnothera Missouriensis, once planted on the higher levels, is spreading, step by step, down the slope. It is a handsome trailer, and ought to grow so as to overhang a ledge, where it can be seen from below. The Japanese form of the Chinese Bell-flower, Campanula pumila Maresii, whose clear blue flowers associate so well with the dwart Golden-rods in autumn, is another desirable plant which we like to see spreading itself. Alpine and Iceland Poppies, now hybridized, and with double forms, appear in the clear gravel paths, and grow there as vigorously as anywhere. Our native Columbine, Aquilegia Canadensis, though rather intrusive, is, nevertheless, one of the most welcome spring-blooming plants. Occasionally purple forms appear, showing that some late-blooming plant of the species has been hybridized by some of the earlier-flowering plants of A. cœrulea. I do not, however, think any beauty comes from this cross, and feel disposed to weed them out, lest in time too many of them appear. A. Skinneri takes care of itself fairly well, but the Siberian, A. glandulosa, makes no headway, and dies out after a year or two.

Wellesley, Mass. *T. D. Hatfield.*

About Tulips.

THE ruin of the Tulips in flower last week by a few days of hot weather, followed by rains, is a thing to be expected any year. The conditions should serve as a warning against growing only one class of Tulips or those which flower at the same time. Those who are tempted into making barbaric masses of color by planting a bed of Tulips, all of which are certain to flower at once, are apt to secure a short-lived, if vivid, pleasure. When one has Tulips of all sections he not only has a display extending over a number of weeks, but a storm or hot wave has only a temporary effect, and the pleasure is never brought to a sudden stop by bad weather.

According to the Tulip fanciers' standards there are very many with bad form and worse color, but if one is not versed in points, and simply enjoys color, there are not many very ugly Tulips, though there seem to be many of flimsy texture. Except Tulipa Greigii, which stands alone for beauty and distinctness, the original species are not as handsome as many of the Dutch hybrids, yet there is a character and distinction about most of the species which makes them attractive and pleasing garden-plants, and they often serve as a foil to the regularity and formality of the hybrids. Of course, one must except the Parrot Tulips from the formal ones. As a rule, I think it will be found that the species, except, possibly, T. Greigii, are more reliable and regular in flowering from year to year than the hybrids, which, under rude treatment, soon run out. One often finds Dutch hybrids with distinct traces of T. sylvestris, but this species for a mass of yellow is unsurpassed. It is of a good rich color, is pleasantly fragrant and of rapid increase. An Italian form of this sent out by Dammann last year was very good. T. Schamki is a beautiful Tulip, white flushed rose, which gives one the earliest flowers, though it is said by Nicholson to be a synonym of T. Gisneriana, which "is evidently the original stock of most of the late-flowering kinds."

Other species there are in the garden, but none so distinct from the ordinary kinds as the small low-growing Asiatics, which are so suitable for a rockery. These have small flowers of various colors, sometimes with short scapes and broad leaves, as in Tulipa ciliatula, and again taller scapes and narrow leaves, as in some forms lately collected by Mr. Whittall on the Madcan and Naz Daghs. It is now the season of the late-flowering Bybloems, Bizarres, etc., the old favorite garden Tulips, which possess dignity of stature and richness of coloring of a quiet character. Mr. P. Burr has lately been busily collecting some forms of these from old English gardens, remnants mostly of English seedlings. A collection of these at present in flower contains many fine forms; on the whole, rather brighter than the Dutch kinds, though among these are colors which can be spared.

Elizabeth, N. J. *J. N. Gerard.*

Narcissus Notes.

THE flowering season of Narcissus is nearly past now, and only the midseason and late varieties of N. poeticus remain to bloom. The experience of this year has not added to the knowledge of the various kinds in cultivation. One thing is certain, however, in this country, that if the climate or soil does not suit any particular kind of Daffodil it will be surely apparent the spring following the first summer's growth in a weak start and sparse flowering, while hardly a trace of the plants will be left the next year. Of those that have disappeared I cannot call to mind a single kind that I would care to have again, and the best sorts thrive and increase at a surprising rate. Mr. Gerard said, in his last notes on this subject, that a bad memory is a good thing to carry at times in the garden, and this is forcibly brought home to me at times when near the Daffodil beds. It has often been noted in these columns that during summer these beds are filled with annuals such as Asters, Mignonette and others, and last fall when these were past a workman was instructed to clear off the remains, and in his anxiety to clear away everything he pulled up about seventy Narcissus labels. This will explain why a detailed list of losses cannot be given. The better-known and larger-flowered varieties can, of course, be identified, but the bulbs belonging to the Burbidgei, Leedsi and incomparabilis sections had better be lifted and naturalized in the Grass, as has been done with surplus stock of the Poets' Narcissus. In places where many spring-flowering bulbs are used there is abundant room for planting the cheaper kinds in the sod where the grass is not cut until midsummer. We have tried this plan with success in an orchard under the Apple-trees. No care was taken to prepare the soil or even disturb the sod; a spade was thrust into the soil and a bulb put in each place, and I am inclined to believe that if the newer Spanish kinds had been treated in this way they would have lived longer and flowered well, while under the treatment given to the stronger-growing garden varieties they soon died; perhaps from cold, as we never cover the beds in fall unless the bulbs are planted late; it may have been from too generous treatment, as has been suggested.

We have been particularly fortunate in having the so-called white varieties live and do well. Albicans, Colleen Bawn, Moschatus, Leda, Mrs. J. B. M. Camm, William Goldring, have all done well and flowered each year, but we take care not to manure them in fall as we do the others that are grown for cut flowers.

One of the gems of the border is the Irish form of the double Jonquil, with the astonishing name of Narcissus odorus plenus Hibernicus. We have had it four years, and it never fails to bloom, and increases each year. On the contrary, N. capax plenus has disappeared. N. biflorus is another of the

uncommon kinds that do well. It is very late in blooming, and resembles the Tazetta section in general appearance, having several flowers to each stem, and these fragrant. Muticus, the last of the Trumpet Daffodils, has taken longer to die than any other, and there are still a few left. These were evidently collected bulbs, as no two were alike, but they did not take kindly to cultivation. We have now a fine reserve stock of bulbs to dig from to grow in pots in winter. Home-grown stock is far preferable to any that can be imported, and after flowering these are replanted in among the shrubs, and in two years are as good as ever. Those who intend to plant Daffodils will do well to make out a plan of the bed after the work is completed, and keep it for reference. Had this been done in our case the loss of our labels would have been less of a disaster. No one can go amiss in planting such kinds as Emperor, Empress, Horsfieldii, M. Foster, Grandee, Countess of Annesley, Princeps, Golden Spur, Obvallaris, Sir Watkin and Henry Irving. Maximus and Ard Righ have not done so well as we anticipated, and have now almost died out.

Border culture has one disadvantage in that after every April shower the purity of the flowers is marred by the earth that has been splashed over them, and there seems to be no way of preventing this except by planting in the grass; this we shall try on a much more extensive way next fall. Regular masses should be avoided, or the effect would be more or less artificial. I have seen acres of the common kind growing wild in pastures in the southern counties of England, and cattle do not seem to eat the foliage, or these wild Daffodils would have been extinct long ago.

South Lancaster, Mass. *E. O. Orpet.*

Coreopsis grandiflora.—For cut-flower purposes or for a border plant there is nothing which bears yellow flowers to equal Coreopsis lanceolata and C. grandiflora. I was never aware of its value as a pot-plant until this year. We wintered a few plants in a cold frame in five-inch pots and brought them indoors about the middle of January, and a shift was given them to eight-inch pots about the middle of April, when the flower-stems were well advanced. Since the last week in April our plants have been loaded with flowers some three inches in diameter, borne on fine stems eighteen to twenty-four inches long. For cutting this Coreopsis is much superior to any other variety, and its easy cultivation should ensure its wider use as a pot-plant. We sow our seed in the open ground the last week in July, and those required for indoor use should be potted about the end of October.

Taunton, Mass. *W. N. Craig.*

Dionæa muscipula.—This little plant, popularly known as Venus' Fly Trap, well deserves a place in the greenhouse. The ordinary observer may look on it only as a curiosity, but to the plant-lover it has a beauty all its own. The upper portion of the leaf, which constitutes the trap, is dilated into a two-lobed irritable limb, furnished at the margin with a row of long stiff bristle-like teeth. When a fly or other insect alights on the inner side of this portion it immediately folds up and holds the insect while it makes the least motion, but gradually assumes its normal position again after the insect is killed and ceases to struggle. It is of easy cultivation and does well in a greenhouse temperature and should be placed in a position where it will be shaded from direct sunlight, but at the same time have abundance of light and air. First place the plants in small pots half filled with crocks, using live sphagnum moss as potting material, then place the pots about six in a ten-inch pan, and pack them firmly around with sphagnum, place the pan in a saucer and keep this all the time filled with water.

Tarrytown, N. Y. *William Scott.*

Saponaria ocymoides, a dwarf-growing perennial Soapwort, from the south of Europe, is one of the few really good rock-work plants which stand our hot summers; it has very pretty pink or red flowers, produced in such great profusion as almost to cover the foliage from view. Seed sown in the fall will give flowering plants for the following spring. Cuttings root well enough in a cold frame, but seedlings are preferable, as they form more bushy plants than those from cuttings.

Fritillaria imperialis aureo-marginata.—The variegated Crown Imperial is a most striking object now in the herbaceous border. The common kinds are handsome when well developed, but this form has, in addition to its flowers, beautifully variegated foliage. The Crown Imperials ought to have a place where they can remain undisturbed during the summer, as after flowering they soon die down to the ground. It is well to have the places where they are planted indicated by a good stout label. As it is an early bloomer, this species is very liable to get hurt from cold winds, therefore a sheltered position is desirable.

Botanic Garden, Washington. *G. W. O.*

Correspondence.

Winter Storage for Tender Evergreens.

To the Editor of Garden and Forest:

Sir,—Two years ago I imported from England about a hundred tub plants for the decoration of my terraced garden. The invoice included Cephalotaxus Fortunii, Cupressus Lawsoniana and several garden forms, Taxus elegantissima, T. baccata, etc.; Ilex crenata, Evonymus, Box, Portugal Laurel, Holly and Retinospora.

This spring more than half of the plants are dead or dying, owing, I think, to faulty management during the winter. I shall esteem it a favor if some of your correspondents will enlighten me as to the best methods of winter storage and care of such plants. My storage-house is of brick, fifty feet by twenty on the floor and eighteen feet high, with perfect means of controlling light and temperature. The questions I should like to have answered are: Can the above-named plants be satisfactorily wintered in common? If yes, what should be the light and temperature of the storage-house, and the arrangement of plants with reference to sources of light and ventilation, and how much watering should they receive?

Weston, Mass. *Francis Blake.*

[The above inquiry invites attention to the fact that there are many beautiful evergreens which cannot endure the outdoor rigors of a New England winter, but which in suitable quarters can be easily carried through the trying season, and then be most useful plants for decorating lawns and terraces in summer. The variegated Hollies, Evonymus, Yews and various forms of Cupressus, Retinospora, Laurel, Sweet Bay are all in this class. It should be understood at the outset that all these plants will stand a large amount of cold, and in the moister climate of Great Britain they very frequently go through periods when the temperature ranges very near the zero line. Owing to the better maturing of the growth here in fall there is no reason to doubt that the evergreens named above would endure even more cold here than in Great Britain; but our cold weather is often accompanied by winds of high velocity, while the sun is as high in our skies during February and March as it is in Great Britain in May and June. This combination of hardships is too formidable for these choice evergreens which have been developed under more equable conditions of climate. An illustrative case is that of the common English Ivy, which is fairly hardy even here in Massachusetts if planted on a north exposure, but a southern aspect is sure death to it the first winter. Taking it for granted, then, that a frost-proof structure is not essential to these plants, the matter of providing a place of storage for them is much simplified. Ours are placed in the cellar under the coach-barn, where it freezes every winter soon after the advent of really cold nights; but once frozen, there is no thawing out until the month of March, and there is never any need of watering until after the plants are taken out-of-doors. As long as this complete rest is obtained without admitting air by means of ventilators, all goes well, but should the structure be actually frost-proof, it will be necessary to give air enough to bring down the temperature to from twenty-five to thirty degrees; it may go lower than the first, but never higher than the last-named figure until the time arrives to prepare to get them out in spring. Pure air is, of course, essential; asphyxia and dyspepsia are as common symptoms in the vegetable as in the animal world. If a cellar is used, perfect drainage must be secured and no deleterious gases that the plants cannot breathe should be admitted. An excess of ammonia from adjacent horse-stables, for example, might be fatal. The soil should be made porous by good drainage, and the admixture of charcoal and lime refuse with it is advisable on account of the purifying action of both these substances.

Tubs are the best receptacles for these plants, as the

wood is a good non-conductor; slate or earthenware will heat in the sun sufficiently to damage the roots in hot weather. Great care is necessary in the culture of plants in tubs to prevent the ingress of earth-worms. If the tubs be placed on the ground the moisture will attract them for a great distance, and the drainage will soon become clogged and ill health will follow. Wherever it is possible, as, for example, on terraces, it is best to place the tubs on masonry. If not, they should be elevated on bricks to give a circulation of air, and if earth-worms have already made an entrance they may be driven out by the application of clear lime water; it is possible to use the same lime to make several applications of lime water, as water will hold only a certain quantity of lime before becoming saturated. Of course, Ericaceous plants cannot be treated in this way. Lime water would be fatal to Rhododendrons, Kalmias, Andromedas, Leucothoës, and all plants that have the fine hair-like roots characteristic of the Ericaceæ.

If the foregoing essentials are carefully regarded there should be no difficulty in wintering any of the shrubs named by your correspondent. It is possible that some one of these, either in construction or treatment, has been lacking, and if it is supplied no further trouble will be experienced. For terraced gardens these shrubs are almost indispensable, and in some locations terraced gardens are indispensable. *E. O. O.*]

Wayside Shrubbery.

To the Editor of GARDEN AND FOREST:

Sir,—I have just returned from a drive, rather more than half a mile of which was on a byroad, which means a narrow strip of wheelway somewhere between stone fences, which, by the law of the state, are set two rods apart. There is little travel on this cross-road, and, therefore, the roadmaster has kindly allowed its borders to take care of themselves for two or three years past. When the wayside shrubbery gets too aggressive he will go in some fine June morning with his axe and cut down some of the most vigorous trees and shrubs and burn them, but in a year or so the place will be as wild as ever. In this thicket the wild Plums have gone out of bloom, but the young Apple-trees which the birds have planted are still in flower, and the Scarlet Fruited Thorns are at their best. There are great masses of bright Pinxter-flowers, and the graceful racemes of the Choke Cherry are unusually abundant.

Of course, the leaves at this season are quite as beautiful as the flowers, and from the deep red of the young seedlings of Swamp Maples to the gray of the Dwarf Willows and the light yellow of the Sassafras there are tints without number. Wild flowers smile all along the sides of the road; Violets and Anemonellas, Mandrakes, and, most beautiful of all, the Columbines, unite with the shrubberies to make pictures of rich and varied beauty, and new ones greet the wayfarer at every step.

No doubt the "inescapable joy of spring" makes everything look beautiful at this season, but this byroad will continue beautiful all summer long, and have fresh attractions every day in the way of foliage, flowers and fruit. I am writing of this simply to say that all through the hilly parts of our eastern states every road can be made just as beautiful if the margin of it is only left to take care of itself. Why should not societies similar to Village Improvement Societies be organized in townships to protect all this beauty instead of paying roadmasters for devastating every roadside? How many people are there who really believe if their attention is once called to the matter that naked stubs and stones and ground burned black is more beautiful than a natural growth of a wayside vegetation?

Denville, N. J. *M.*

Rhododendrons in a Hard Winter.

To the Editor of GARDEN AND FOREST:

Sir,—In reply to your inquiry as to the effect of the past winter on my Rhododendrons, I would say that they have not suffered to any considerable extent. The winter was not unusually severe here, the lowest record being ten degrees below zero, and yet it is true that in this vicinity many collections have suffered rather seriously. Every year my faith is strengthened in the theory that Rhododendrons are more apt to suffer in this country from drought in summer than from cold in winter. We do have a winter occasionally in which plants are injured, but this is not always from serious cold; during the past year, for example, a large portion of the damage showed itself in the latter part of the winter, and it, therefore, seems probable that our bright sun in March sometimes scalds the foliage when it is covered with frozen sleet. For this reason I have made most of my plantation on the north side of a belt of evergreen trees, and I have found that these always suffered less than plants which have a southern exposure; and this is especially true of such varieties as are generally considered half-hardy. This year I noticed that large healthy plants of Album grandiflorum, for example, in a sunny and sheltered border have been quite killed, while varieties as tender as J. Walter and Kate Waterer, planted in the shade and only a few feet distant, are all right. I enclose a memorandum of some of the best varieties which I have been growing for the last few years, nearly all of which have not suffered in the least during the past winter, although a few of them have been slightly touched: A. Adie, Blue Bell, Hamlet, C. S. Sargent, Mrs. C. S. Sargent, F. L. Ames, F. L. Olmsted, James McIntosh, Sefton, P. Simon, Princess Mary of Cambridge, Silvio, Vaüban, Duke of Teck, J. H. Agnew, Mrs. Heywood, Lady Grey Egerton, Bacchus, Lothair, J. Marshall Brooks, J. Walter, Kate Waterer, Mrs. John Clutton, Ralph Sanders, Mrs. Shuttleworth, Duchess of Sutherland, J. D. Godman, Pelopidas, Countess of Normanton.

Wellesley, Mass. *H. H. Hunnewell.*

Shy Wood Plants.

To the Editor of GARDEN AND FOREST:

Sir,—In an illustrated article sometime ago on Phlox divaricata, GARDEN AND FOREST speaks of it as somewhat rare, and though I find it quite common in the woods here I am at a loss to know how such a shy plant can hold its own for any length of time anywhere. It is never found except in part shade and in soil made almost entirely of leaf-mold, so light that in exposed places it would require the leaf and root fibers to keep it from blowing away. It lives the most precarious life in semi-cultivation, and I have always lost every specimen after two or three years. The partiality the garden-slugs have for Phlox has something to do with its disappearance, but it must be classed as tender, or perhaps uncertain is the better word, along with Bee Balm, Claytonia, Hepatica, and not a few others which cling to the woods, not probably from choice, but because one needs the winter protection and another the light soil afforded there, and also the freedom from the sod that drives them all from the fields.

Nearly all wood plants are obliged to flower in the early spring before the trees put out their leaves and live a semi-torpid life the rest of the season. Cannot some evolutionist show us how the rise of the sod-producing Grasses has not only driven them to the woods, but also changed their time of flowering to accommodate them to their condition of enforced seclusion?

Buffalo, N. Y. *John Chamberlin.*

Recent Publications.

Dictionary of Orchid Hybrids. By E. Bohnhof. Paris: Octave Doin.

This little manual contains a list of all artificial hybrids among Orchids which were known up to the beginning of the present year, with the name of their introducer and the date of their appearance. The plants supposed to be natural hybrids are also placed in the list, and tables are added to indicate the seedlings which have been obtained from each species. This will be a useful list for all who wish information as to the origin of hybrid Orchids, and those who are engaged in hybridizing will find it serviceable by showing in a compact form what has been accomplished with each species. It is proposed to publish a new edition of this dictionary every two years, so that the list can be kept as nearly up to date as possible.

Notes.

There is no more showy flower just now in the border of hardy perennials than the cut-leaved Pæony, Pæonia tenuifolia, which blooms several days earlier than the ordinary garden varieties of P. officinalis and P. albiflora. The single-flowered variety, with its solitary dark crimson cup-shaped flowers on stems a foot and a half high, is much more rare

and rather more handsome than the double-flowered form, although the latter is very beautiful. These plants need nothing but fairly rich and deep soil and they will continue to flower year after year.

During the first week in May two hundred and twenty-four car-loads, amounting to nearly 64,000 boxes, of oranges, were sent from Riverside, in southern California. It is estimated that the value of the entire orange crop of the section which ships fruit from this town will sell for $750,000.

The first small shipment of Peen-to peaches, from Florida, arrived last Friday, and regular supplies are expected this week and hereafter during the season. Fine Early Alexander peaches, grown under glass in Massachusetts, bring fifty cents each, and hot-house melons cost a dollar and a half apiece. The finest Porto Rico pineapples retail for one dollar each. Muscat grapes, from Cape Colony, are still coming in limited quantities, but the clusters are small, and persons who are willing to pay for grapes at this season prefer the more showy products of the hot-house.

In a paper on Cannas, read by Mr. James I. Donlan before the New York Florists' Club last week, he speaks of the American seedling Columbia as being of a new and distinct type and altogether a noble plant. It grows only from two to three feet high and is of a stocky habit, with large dark green foliage of leathery texture. The flower-spike often branches so as to give the effect of three or four trusses of bloom at once, each of these appearing as a separate spike. The color is a rich cardinal-red with a scarlet gloss toward the end of the segments, and the immense trusses of red flowers borne on plum-colored stalks give the plant a very distinguished appearance.

The first sweet corn of the season came from Bermuda by Monday's steamer, and was offered by Mr. Kelly, the leading dealer in Washington Market, at seventy-five cents a dozen. It was well grown, and after the voyage of thirty-six hours the husks and kernels looked as fresh as they usually do in warmer weather when coming from neighboring gardens. Parsnips, sweet potatoes and other winter vegetables of good quality may still be had, and, besides fresh products from the south, kohl-rabi and most delicate cauliflower are brought in from neighboring hot-houses. All early spring vegetables are now in good supply, but the best asparagus, green peas and wax beans, with new squashes and cabbage from Florida, still command high prices.

The second annual exhibition of native flowers collected by the Science Class of the Normal College of this city, was made in the library of this institution during three days of last week. The collection was tastefully arranged on a half-dozen long tables, many species and varieties of wild flowers from eighty-two different genera being represented. The display of flowers was not only beautiful in itself, but it was also interesting and instructive in the scientific accuracy with which the flowers were arranged, each order being grouped by itself and each specimen being carefully named. Not the least interesting table was the one bearing specimens of Grasses, Mosses, Ferns and branches of trees in blossom. The exhibit was altogether creditable, and, besides its value to the students and collectors, showed to the visitors, what many of them had never realized before, the beauty and great variety of the native flowers now in bloom in this locality. Most of the specimens came from Pelhamville and Staten Island. An admission fee of fifteen cents was charged and this was to be for the benefit of the Alumnæ Kindergarten.

On the sidewalks the itinerant dealers are busy selling branches of Pinxter-flower, Dogwood and Black Haw, and even the expensive flower-shops are decorated with Mandrake, Podophyllum peltatum. Commercial flowers are very abundant, but they are of poor quality, and it is hard to get first-class roses and carnations. The best Madame Cusin roses bring only $1.00 a dozen; Brides and Bridesmaids, $1.50 a dozen; American Beauty, $1.00 to $5.00; Baroness Rothschild and its white sport, Mabel Morrison, $3.00 to $4.00; Ulrich Brunner, $3.00 to $5 00, and General Jacqueminot, which are more scarce than some other sorts, $2.40 to $4.00; Moss rose-buds are seen in most of the best stores, and these cost $2.00 a dozen. Well-grown carnations of the Helen Keller, Dean Hole and Albertina varieties bring seventy-five cents a dozen, but the average price for good flowers of other varieties is fifty cents, and fairly good carnations may be bought on the street for thirty-five cents a dozen. A few pæonies have come, and some forced gladioli. Of Dutch bulbous plants a few Parrot tulips and late Poets' Narcissus are all that are left. One of the prettiest flowers now sold is the yellow Sweet Sultan. Sweet peas and lily-of-the-valley are favorites, and in special demand at this season, and lilacs are offered at prices that are merely nominal.

A *Farmers' Bulletin*, just issued by the United States Department of Agriculture, gives many interesting facts about the cultivation and use of Sweet Potatoes. The most northerly state where this crop is extensively cultivated is New Jersey, although crops have matured at the experiment stations in Lincoln, Nebraska, and Geneva, New York. The Sweet Potato is most commonly propagated by means of buds from roots planted in hot-beds, and the shoots as they develop are planted in the field. Cuttings from these vines are often rooted and transplanted for the main crop. The plant rarely matures seed in the United States. Ninety days after the sets are transplanted early varieties will be ready to dig for use. The best growth is made in warm, sandy, well-drained, and even dry, soil. The greatest care in harvesting is necessary to prevent bruising the roots in handling, for the skin is very tender and wounded roots are sure to decay. They are best preserved by being kept in a temperature of seventy-five degrees for a fortnight after digging, and then lowering the temperature and keeping it during the winter at from fifty to sixty degrees in a dry atmosphere. Rather more than two-thirds of the weight of the Sweet Potato root is water. Three pounds of the roots afford as much dry matter as one pound of corn, but only about half as much protein. On sandy soil, however, more dry matter to the acre can be secured with a crop of Sweet Potatoes than with a crop of Corn. The young leaves and tender sprouts of the plant are sometimes prepared and eaten like spinach, and the vines, although they are usually left to decay in the field, can be profitably used as food for cattle. They are better fed green than cured into hay, and they cannot be successfully made into ensilage.

In Bulletin No. 87 of the Cornell Experiment Station, Professor Bailey presents a study of the Dwarf Lima Beans which have become so popular. These Beans have been derived from three types of the Pole Lima. The first of these types is the so-called Sieva or Bushel Bean, Phaseolus lunatus. Henderson's Dwarf Lima is a sport from this, the original plant having been found more than twenty years ago by a negro along a Virginia roadside. The Lima Bean of American horticultural literature comes from the variety macrocarpus of P. lunatus. There are two types of this Bean, the one known as the Potato Lima, with tumid or nearly spherical seed, the other as the Flat Lima, with large, soft, veiny seeds, tall growth and late maturity. The Thorburn, Kumerle or Dreer Dwarf is a form of the Potato Lima, and the Burpee came from a dwarf plant of the large White or Flat Lima. There is a fourth Dwarf, the Barteldes, from Colorado, which has little to recommend it for cultivation here. It is derived from P. multiflorus, the Scarlet Runner or Painted Lady, which is cultivated generally as an ornamental plant here, although the young pods and ripe beans are excellent for the table. These dwarf Limas are all valuable, since they are from two weeks to a month earlier than the Pole varieties. They are so productive that in the north it is possible to secure a greater total yield per acre from them than from the old varieties, since the plants require less room. We have often spoken of the relative value of these Beans. Henderson's is the earliest. The plant is compact, the most productive, and continues the longest in bearing, and the small, flat, clear white beans are of as good quality as any Sieva Bean, though not so rich and buttery as the true Lima. The pods also escape the mildew, which is often serious upon the late thick-podded sorts, and its combination of merits insures a place for it in every garden. Another Dwarf known as Jackson's Wonder is also of the Sieva type, differing from Henderson's in having the beans brown-speckled, the plant being rather less dwarf and compact and a trifle later. The Thorburn, Kumerle or Dreer Dwarf is a bush-plant with no tendency whatever to climb, only moderately productive, and rather late, its white tumid beans having the excellent qualities of the Potato Lima, which by many people is considered superior even to the large white Lima from which Burpee's Bush Lima is descended. This last is a true Lima, somewhat taller than the Thorburn, occasionally reaching a height of two feet, the flat seed as large as those of the Pole Lima; season medium to late, or about three weeks later than the Henderson, and about the same as that of the Burpee, and rather more productive than that variety. Mr. T. Greiner considers the Dreer Bush Lima as the best bean in quality, but he notices as a drawback to the usefulness of the plant that the pods grow so closely together and so near the ground that they are in danger of becoming soiled and rotted before the beans are fit to use.